



Forecast Skill Visualization in Climate Research

Michael Boettinger (1), Niklas Roeber (1), Dela Spickermann (1), and Iuliia Polkova (2)

(1) DKRZ, German Climate Computing Centre, Hamburg, Germany, (2) Institute of Oceanography, University of Hamburg, CEN, Hamburg, Germany

With ensemble simulation techniques, the uncertainty in climate simulations can be assessed, and the statistical robustness of the results is improved in comparison to single model realizations. Different ensemble generation schemes exist to represent sources of uncertainty relevant at certain timescales. In this project, we analyze near-term climate predictions, for which the initial condition uncertainty dominates the total uncertainty, and can be sampled by repeating forecasts several times with the same boundary condition, but with slightly varying initial conditions. Such experiments allow estimating the model specific ensemble spread.

Ensemble simulations have added a new dimension to the data: for climate variables with a given spatial and temporal resolution, associated uncertainty (or certainty) measures can be derived. To make use of this new information, the data has to be visualized concurrently with its respective uncertainty information. For near-term climate predictions, the uncertainty is usually represented in terms of spread scores or the forecast skill. This information might have completely different spatial and temporal characteristics than the forecast variable. In this work, we show how geospatial uncertainty information is visualized today within the climate community. Furthermore, we present own approaches using state-of-the-art visualization systems like Avizo Green or Paraview. As example data set, we have used decadal climate predictions.